CHAPTER 1

GENERAL

1-1. Purpose. This manual provides guidance and criteria for the design of high lift and water booster pumping stations in potable water distribution systems.

1-2. Scope. Criteria is provided for pumping units operating as components in distribution systems. Guidance is provided for sizing and selection of pumps and pump drives, piping, control valving, flow metering, pump station structures, and operational features.

1-3. References. Appendix A contains a list of references used in this document.

1-4. Planning Factors. Main pumping stations which supply water to the distribution system will be located near the water treatment facility or a potable water storage facility and will pump directly into the piping system. These pump stations may be a part of these other structures. Pumps which pump directly into transmission lines, and distribution systems are sometimes called high lift pumps. Booster pumps may be located anywhere in the system to increase the pressure in the pipeline. Booster pump stations are usually located remote from the main pump station, as in hilly topography, where pressure zones are required. Booster pumps may be needed to handle peak flows in a distribution system which can otherwise handle the normal flow requirements. Where a pump station is added to an existing installation, previous planning and design, which is based upon a total system hydraulic analysis should be consulted before the addition is designed. New or updated studies will determine station location and present and future demand requirements. Locating permanent pumps so that there will be a positive head on pump suctions will eliminate many operational problems. Site selection will be determined from evaluation of a topographic survey and flood plain analysis to determine if there are any flooding probabilities of the proposed plant site. The site must not be subject to flooding. Major planning factors are: availability of electric power, roadway access for maintenance and operation purposes, security, and adverse impact, if any, upon surrounding occupancies. Site development will depend upon a site soils analysis showing adequate support for foundations or possible ground water problems, and a grading and drainage plan of the area showing that runoff away from the structures can be obtained.